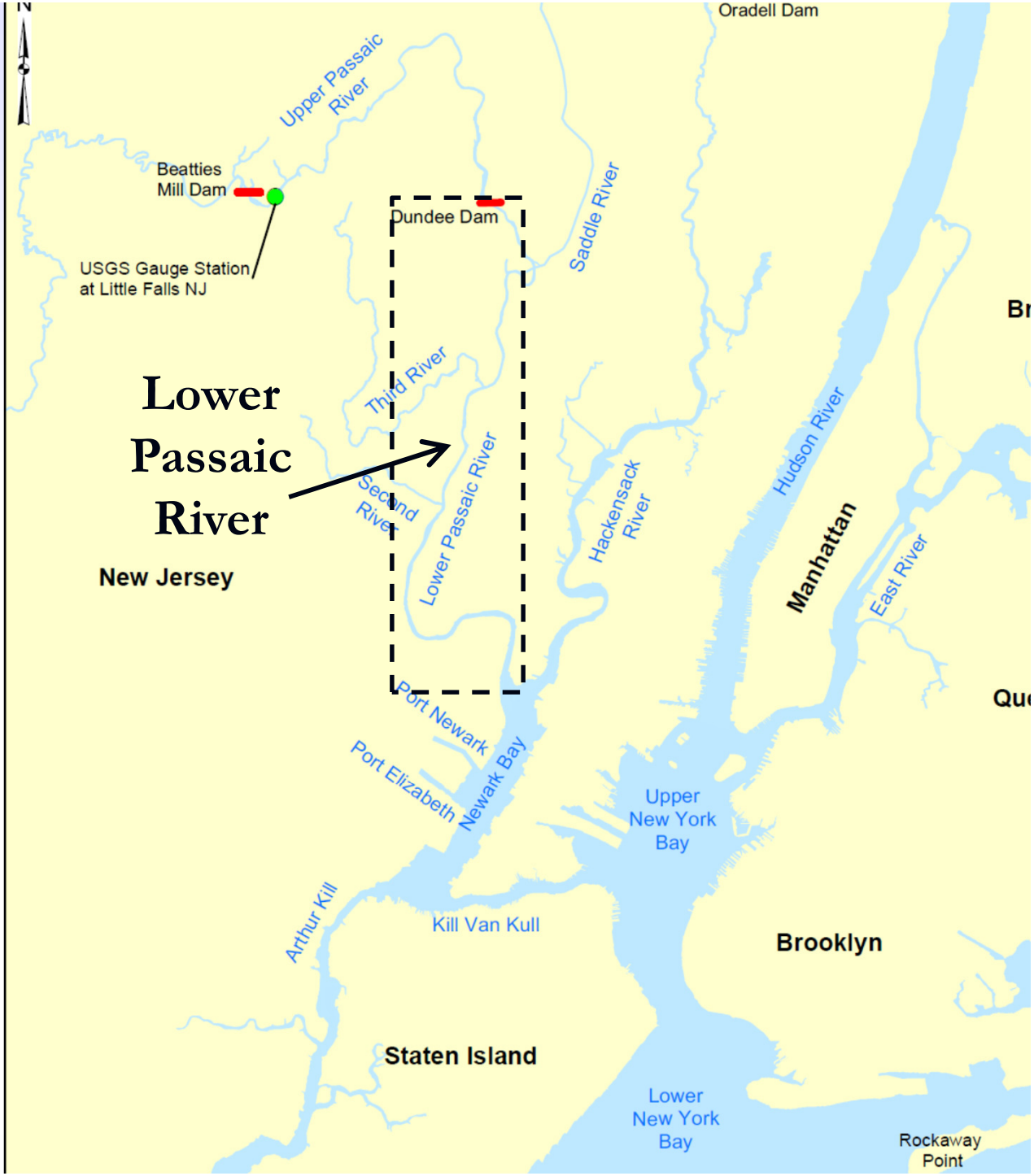
Region 2 serving the people of New Jersey,
New York, Puerto Rico and the U.S. Virgin Islands

PROPOSED PLAN FOR CLEANING UP THE LOWER 8 MILES OF THE LOWER PASSAIC RIVER

May 21, 2014

Kearny, New Jersey

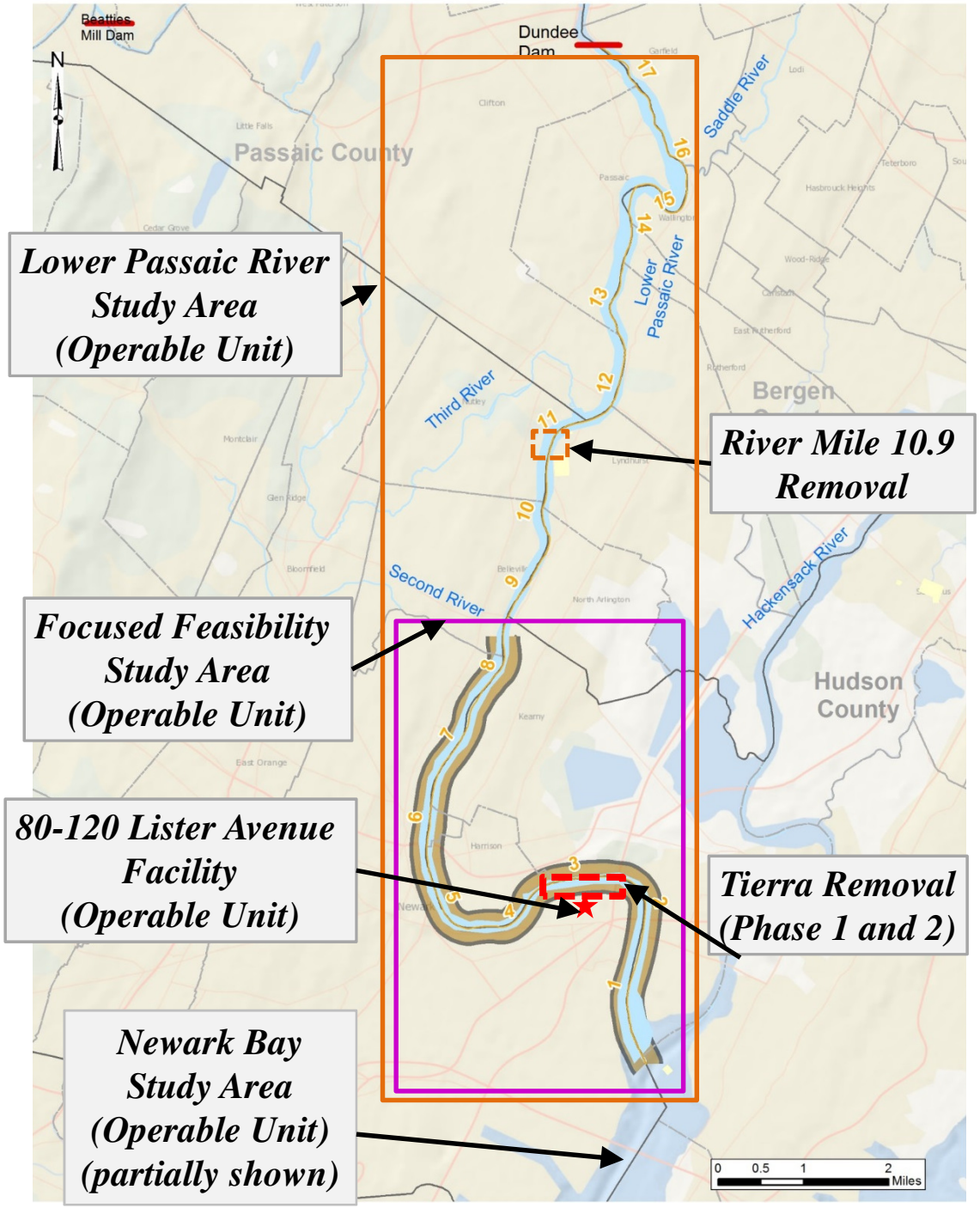
New York-New Jersey Harbor Estuary



Diamond Alkali Superfund Site Cleanup

Contaminated with dioxins, PCBs, pesticides, metals, PAHs

Phased approach to clean up



History of Lower Passaic River

- 1800s: Major center of Industrial Revolution
- Until 1970s, discharge of wastewaters into river was common practice
- Over 100 industrial facilities potentially responsible for sending contaminants into river
- Navigation channel built in late 1800, maintained until 1950s to 1983
- Industrial discharges & filling in of channel resulted in large inventory of contaminated sediment

Why Clean Up the Lower 8 Miles?

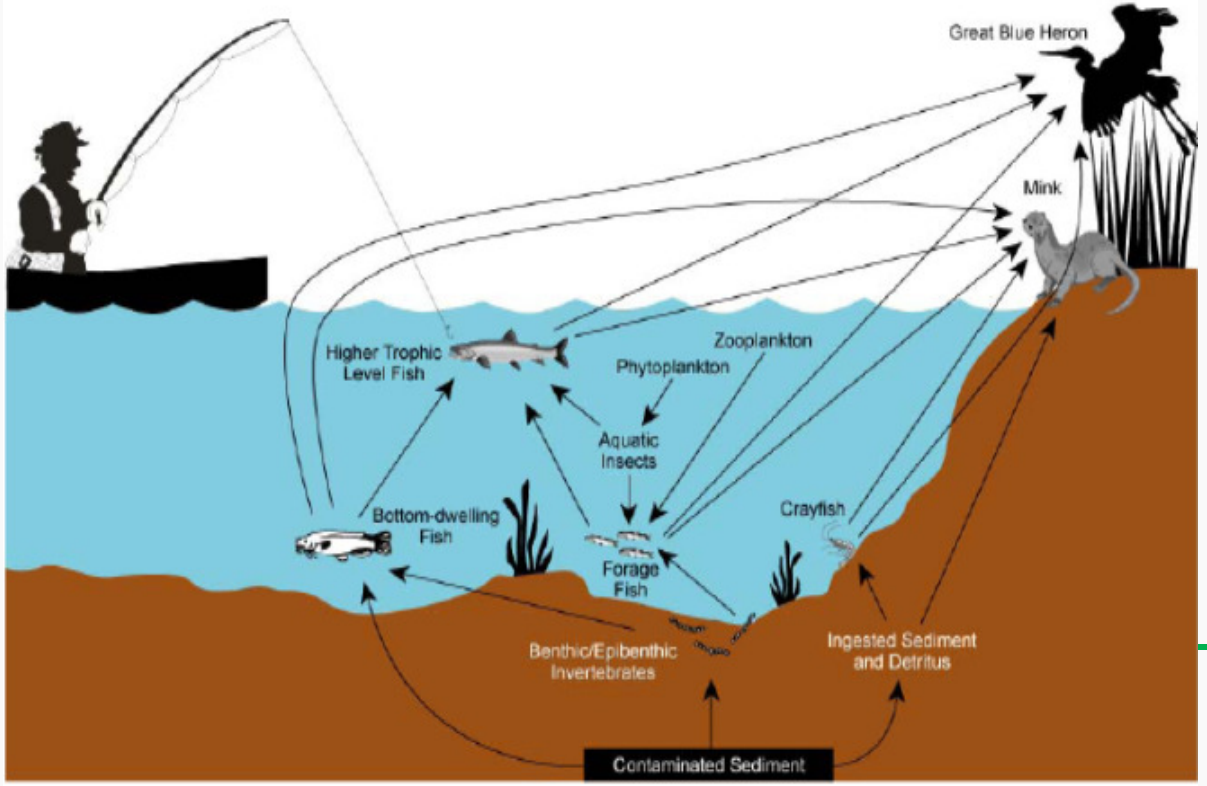
- **Contaminants bind to fine-grained sediment (i.e., silt)**
  - Below River Mile 8.3: mostly silt with pockets of sand
  - Above River Mile 8.3: mostly sand with pockets of silt
  - 85-90% of fine-grained sediments are below River Mile 8.3
- **For Lower Passaic River, majority of contamination is found in the lower 8 miles**

What We Know

- **Lower Passaic River is tidal**
- **Surface of contaminated sediment suspends and moves with tides twice a day**
  - Deeper sediments come up during storms
- **In lower 8 miles, contamination is everywhere, bank to bank at levels far above clean-up goals**
- **Contamination levels have declined very little in past 15 years**
  - This is true for sediment concentrations and
  - Fish and crab tissue concentrations
- **Resuspension of sediment is the major on-going source of contamination**

Risks from Contaminated Sediment

Highlight 2-3: Sample Pictorial-Style Conceptual Site Model Focusing on Human and Ecological Threats



Source: Adapted from EPA Region 5, Sheboygan Harbor and River Site

Risks related to eating fish/shellfish from the river are significant, requiring action to reduce these risks

Risks from exposure to contaminated sediment are significant for wildlife, requiring action to reduce these risks

Cleanup Options

- EPA evaluated 4 options:
  1) **No Action**
  2) **Deep Dredging with Backfill**
  3) **Capping with Dredging for Flooding and Navigation**
  4) **Focused Dredging and Capping**

Active Options

- Active options have 3 disposal methods:
  A. **CAD (contained aquatic disposal) in Newark Bay**
  B. **Off-Site Disposal**
  C. **Local Decontamination & Beneficial Use**

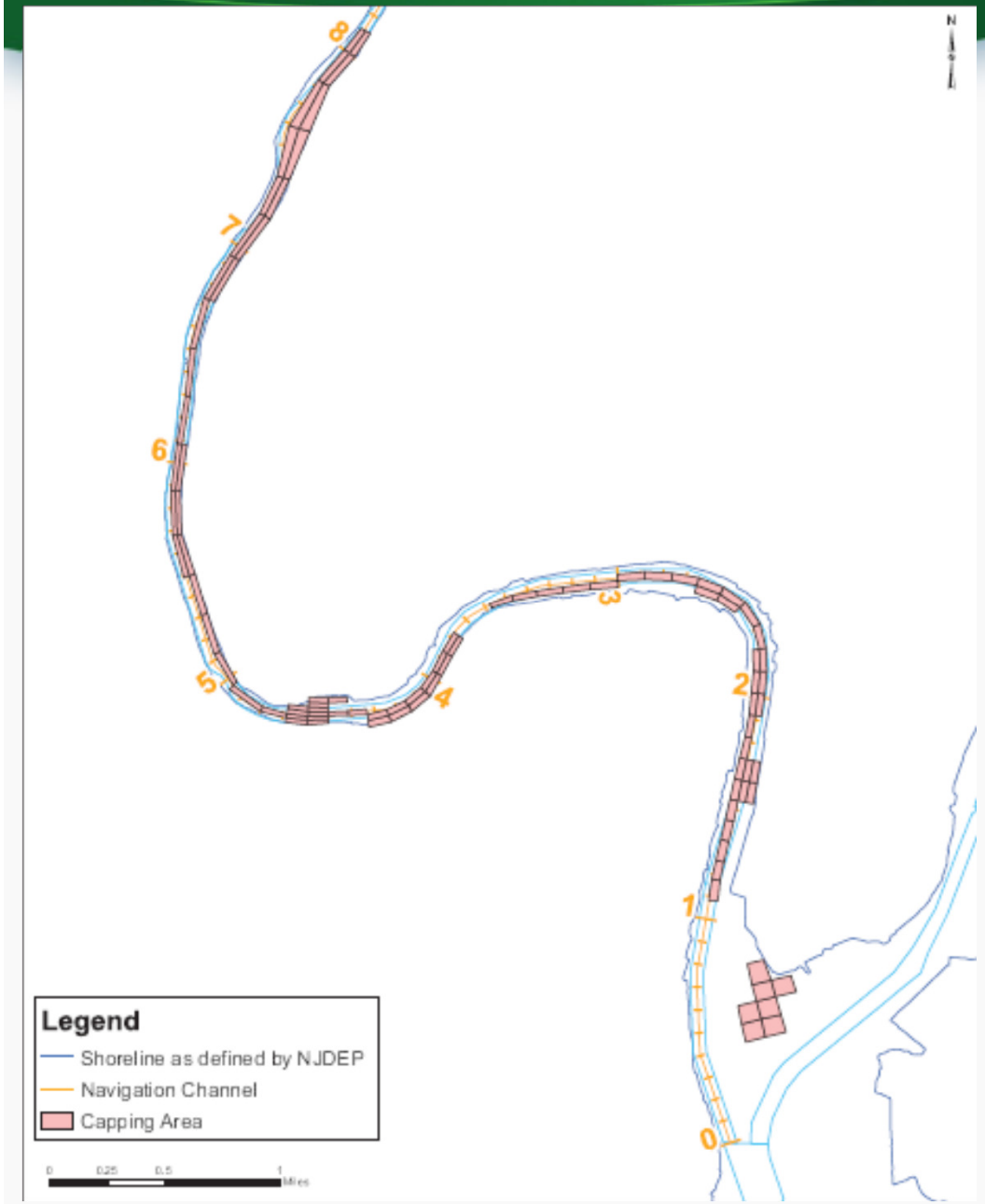
Bank-to-Bank Cleanup Options

2) Deep Dredging with Backfill:

- Remove all contaminated fine sediment in lower 8 miles
- Backfill with 2 feet of sand (no maintenance required)

3) Capping with Dredging for Flooding and Navigation:

- Engineered cap over lower 8 miles (with maintenance)
- Dredge enough contaminated fine sediment to:
  - Prevent additional flooding after cap is installed
  - Allow for commercial navigation in River Miles 0-2

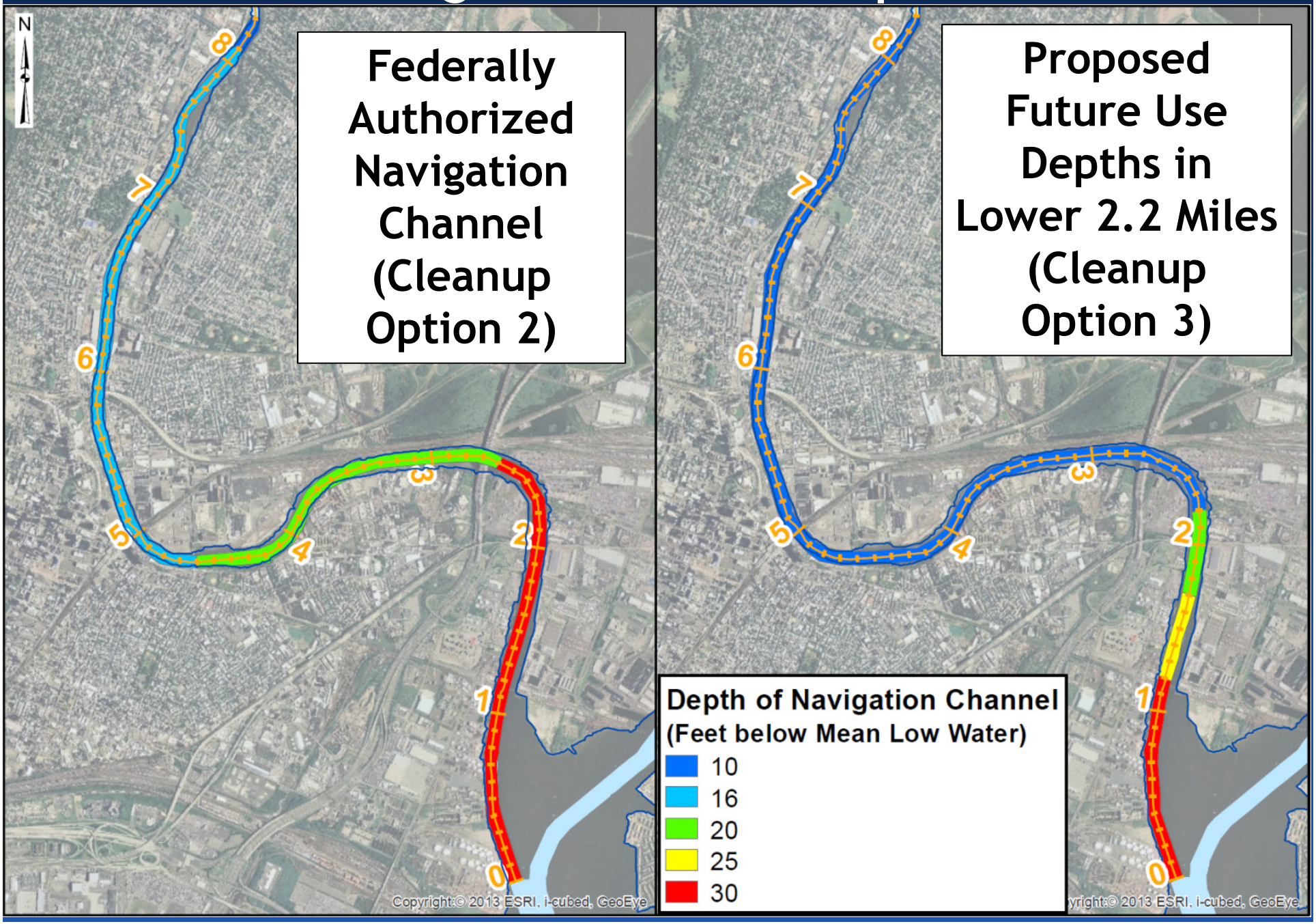


Partial Cleanup Option

4) Focused Capping with Dredging for Flooding:

- Dredge and Cap about one third of lower 8 miles
- Areas that send the most contaminants into the water

Navigation Channel Depths



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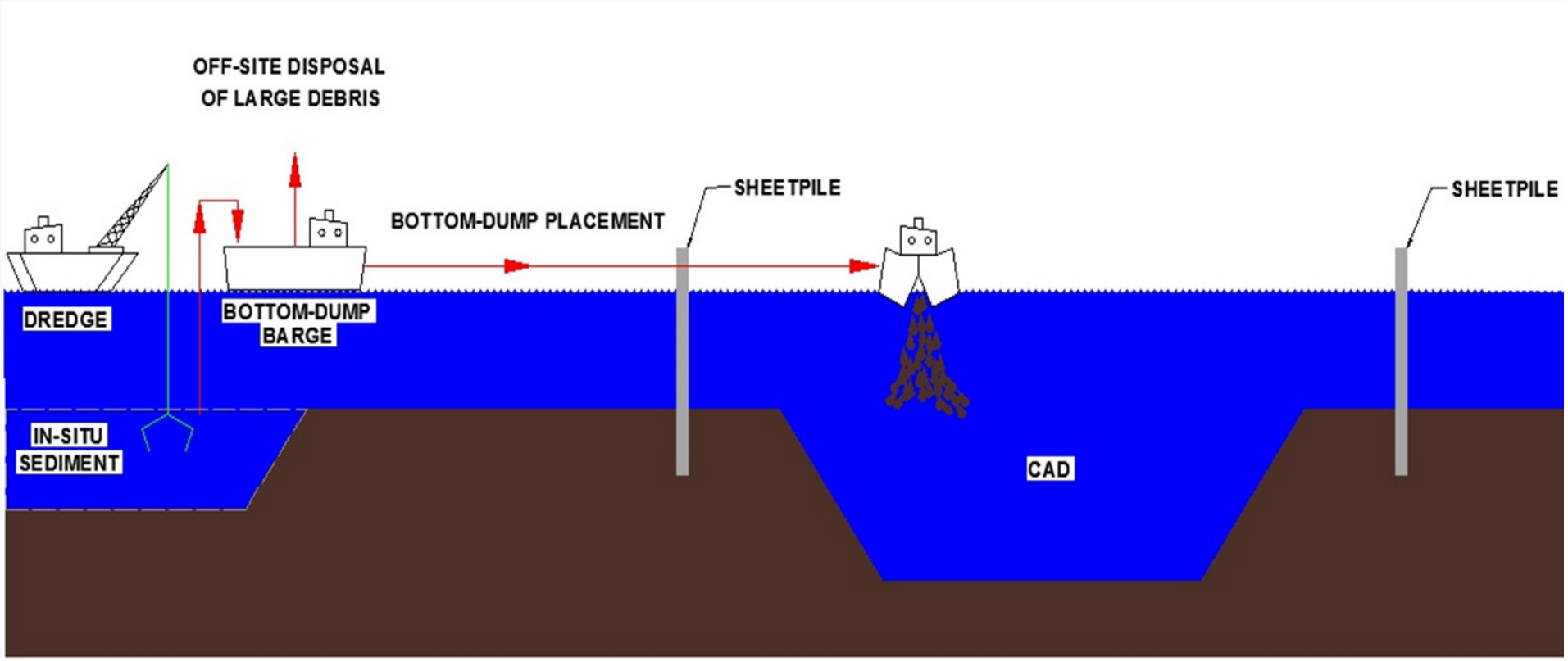
Disposal Method A: Contained Aquatic Disposal (CAD)



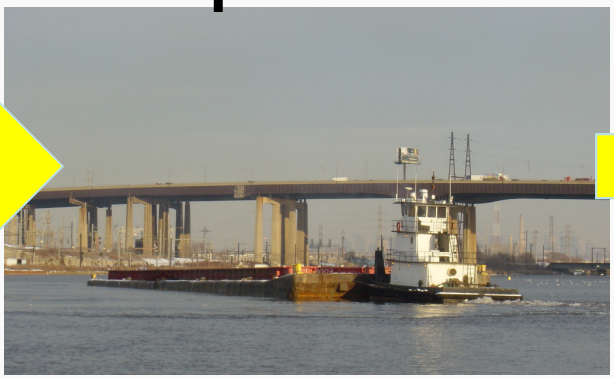
No on-land processing facility

(2 of 3)

Disposal Method B: Off-Site Disposal

Dredging

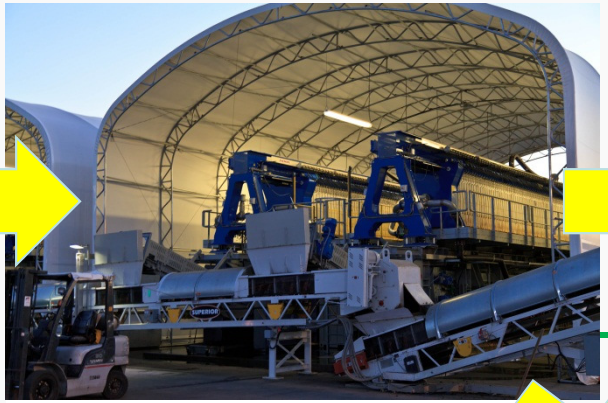
Transport



From Barge to Land

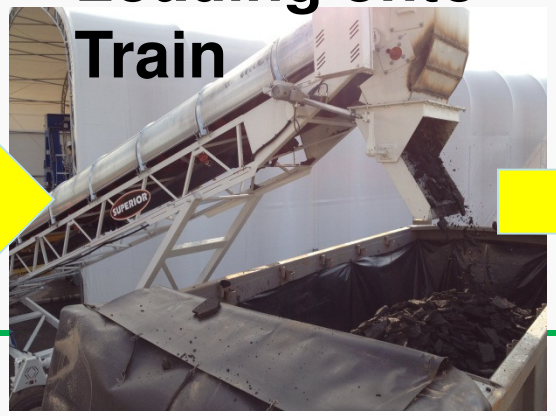
Courtesy of John Henningson; Henningson Environmental Services, Inc.

Dewatering



Courtesy of Stuyvesant Environmental Contracting, LLC (Boskalis-Dolman)

Loading onto Train



Courtesy of Stuyvesant Environmental Contracting, LLC (Boskalis-Dolman)

Off-site Disposal

Water Treatment Plant

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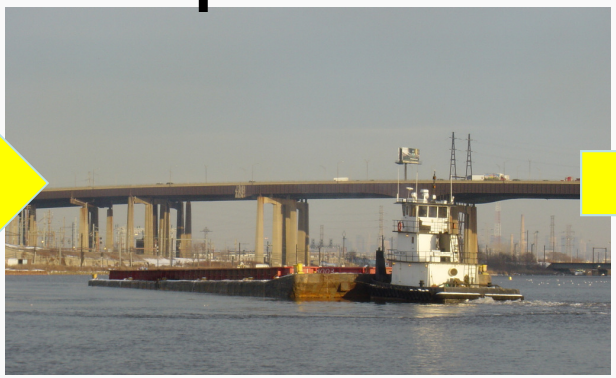
Disposal Method C: Decontamination

Dredging

Transport



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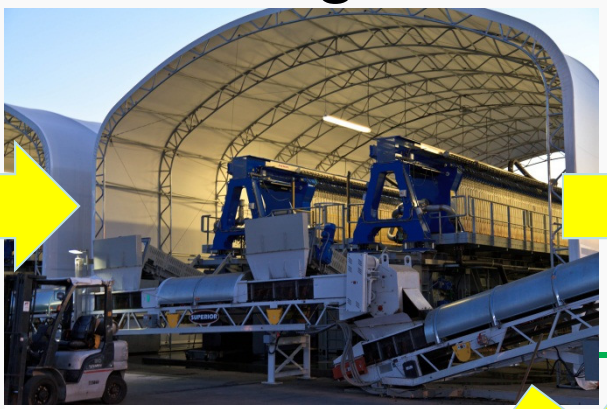
Dewatering



Courtesy of Stuyvesant Environmental Contracting, LLC (Boskalis-Dolman)

Decontamination

Beneficial Use

Water Treatment Plant

Summary of Cleanup Options

Cleanup Option	Volume Dredged	Construction Time	Disposal Methods	Cost
1) No Action	N/A	N/A	None	$0
2) Deep Dredging with Backfill	9.7 million cubic yards	11 years	A) CAD	$1.3 Bil
			B) Off-Site Disposal	$3.2 Bil
			C) Decon/Beneficial Use	$2.6 Bil
3) Capping w/ Dredging for Flooding &Navigation	4.3 million cubic yards	5 years	A) CAD	$1.0 Bil
			B) Off-Site Disposal	$1.7 Bil
			C) Decon/Beneficial Use	$1.6 Bil
4) Focused Capping w/ Dredging for Flooding	0.9 million cubic yards	2 years	A) CAD	$0.4 Bil
			B) Off-Site Disposal	$0.6 Bil
			C) Decon/Beneficial Use	$0.6 Bil

Evaluation of Cleanup Options: Criteria

- **Overall protection of human health & the environment**
- **Compliance with federal & state standards**

Threshold

- Long-term effectiveness & permanence
- Reduction of toxicity, mobility, volume through treatment
- Short-term effectiveness
- Implementability
- Cost

Balancing

- State Acceptance
- Community Acceptance

Modifying
(after Proposed Plan)

Proposed Cleanup Plan

Capping with Dredging for Flooding and Navigation & Off-Site Disposal

- **Cap lower 8 miles bank-to-bank**
  - Before installing cap, dredge to prevent addt'l flooding
- **Dredge in lower 2.2 miles of navigation channel to various depths (backfill/cap after dredging)**
- **Send dredged materials off-site to incinerators & landfills**
  - First barge to on-land processing facility & dewater.
- **Fish/crab consumption advisories in place**
- **Restrictions on dredging/anchoring to protect cap**

(1 of 3)

Key Questions

- **Why bank to bank?**
  - Contamination is everywhere at levels well above cleanup goal
  - Bank-to-bank cleanup would provide opportunity to relax fish consumption advisories over time, while focused cleanup option (#4) would not
- **Why not take it all out?**
  - Taking it all out and capping some of it in the river are equally protective, but capping option has much less impact on community & environment
  - Capping some of it is more easily implemented than taking it all out

(2 of 3)

Key Questions

- **CAD Site versus Off-Site Disposal**
  - Cap over CAD needs to be maintained in perpetuity; Off-Site maintenance done by permitted facilities.
  - CAD does not treat any of the sediments; Off-Site would incinerate up to 10%.
  - CAD has the least impact on local communities; Off-Site would need on-land processing facility.
  - CAD has the most impact on Newark Bay; Off-Site would have no impact on Newark Bay.
  - CAD and Off-Site both technically implementable; but CAD likely not administratively implementable.
  - Cost for proposed cleanup plan: CAD = $1.0 billion
    Off-Site = $1.7 billion

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Key Questions

- **Could the navigation channel be shallower?**
  - Preferred cleanup option includes dredging in the lower 2.2 miles of the navigation channel
  - Future use depths are based on a U.S. Army Corps of Engineers survey of companies that use the channel
  - Users often don't bring in fully-loaded ships and may wait until high tide to use the channel. Users restricted from using larger ships in the future.
  - Dredging a channel adds substantially to the volume and cost of the proposed cleanup plan

ourPassaic.org

Send Comments to:

PassaicLower8MileComments.Region2@epa.gov

or

Alice Yeh
Environmental Protection Agency
290 Broadway, 19th Floor
New York, NY 10007-1866

Cleanup Options
1) No Action
2) Deep Dredging with Backfill
3) Capping with Dredging for Flooding and Navigation
4) Focused Capping with Dredging for Flooding

Disposal Methods
A) CAD
B) Off-Site Disposal
C) Local Decontamination and Beneficial Use